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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/584,708

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EXAMINER

KEMMERLE III, RUSSELL J

ART UNIT

PAPER NUMBER

1791

MAIL DATE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/584,708	<b>Applicant(s)</b> ODAKA ET AL.	
	<b>Examiner</b> RUSSELL J. KEMMERLE III	<b>Art Unit</b> 1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 28 July 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-10 and 12-19 is/are pending in the application.
- 4a) Of the above claim(s) 12-19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

In view of the amendment filed the previous rejections under 35 USC §112 and objections to the specification are withdrawn.

#### ***Claim Rejections - 35 USC § 103***

Claim 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schwetz (US Patent 4,230,497) in view of Hauptmann (US Patent 5,001,088). It should be noted that Hauptmann contains two Certificate of Corrections which replace all of the text in the patent (Cols 1-10). Citations in this Office Action are to information as it appears in the second Certificate of Correction dated 25 August 1992.

Schwetz discloses a method of making a silicon carbide (SiC) body. Many methods of producing the body are disclosed as suitable, including slip casting (Col 7 lines 54-58), which involves dispersing the powder into a solvent, which is then poured into a die and dried to create a green body. The green body is then fired in the presence of flowing nitrogen gas at a temperature of 1900-2100°C to obtain the final piece (Col 2 lines 50-58). Schwetz further discloses that the green body have a carbon containing additive that will be coked during the firing process to result in additional carbon in the finished body (see Claims 18-22).

While Schwetz discloses that the body be heated to 550-650°C (as part of the heating up to the final sintering temperature, it does not disclose that such a temperature is reached under vacuum.

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Hauptmann discloses a method of making a sintered SiC article that involves using an additional carbon containing additive which is coked to result in additional carbon in the finished body. Hauptmann specifically discloses the use of phenolic resin (one of the additives used by Schwetz), and discloses that with such an additive the body should be heated to 600°C in a vacuum (Example 1, Col 6 lines 7-46).

It would have been obvious to one of ordinary skill in the art, at the time of invention by applicant, to have modified the method of Schwetz by using the coking environment taught by Hauptmann. This would have been obvious because Schwetz does not disclose a specific coking environment, and Hauptmann discloses that a vacuum at 600°C is effective for coking phenolic resin in a SiC body.

Referring to claim 3, Schwetz discloses using a sintering time of 10-60 minutes (Col 9 lines 1-3).

Referring to claim 4, Schwetz discloses that the sintering take place in a vacuum, below 20 mbar (claim 16).

Referring to claim 6, Schwetz discloses a range of nitrogen content of from less than 50 ppm to 2500 ppm (Table 1, Col 10 lines 6-12). Schwetz further discloses the relationship between nitrogen content and the electrical resistance of the final article.

It would have been obvious to one of ordinary skill in the art, at the time of invention by applicant to have modified the process of Schwetz in order to achieve a finished product having the desired amount of nitrogen based on the electrical resistance properties desired in the final piece.

“[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.” In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) (Claimed process which was performed at a temperature between 40°C and 80°C and an acid concentration between 25% and 70% was held to be prima facie obvious over a reference process which differed from the claims only in that the reference process was performed at a temperature of 100°C and an acid concentration of 10%.); See also In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980) (prior art suggested proportional balancing to achieve desired results in the formation of an alloy).

Referring to claims 5, 7 and 8, Schwetz does not discuss the values of the claimed properties. However, it is assumed, based on the similarity between the claimed invention and that of Schwetz in view of Hauptmann, that the prior art device would meet these claim limitations.

In the alternative, it would have been obvious to one of ordinary skill in the art to adjust the method taught by the prior art in order to achieve these values such that a final product was reached having the desired porosity and electrical resistive properties.

Referring to claims 9 and 10, Schwetz discloses using SiC particles having an average size of less than 10  $\mu\text{m}$  (Col 4 lines 27-29).

### ***Response to Arguments***

Applicant's arguments filed 28 July 2008 have been fully considered but they are not persuasive.

Applicant argues that Schwetz teaches away from sintering SiC in a nitrogen atmosphere based on two points.

First, applicant argues that the disclosure of Schwetz that SiC fired as disclosed at Col 2 lines 41-69 contains structural inhomogeneities that render it insufficient for use in high temperature engineering teaches away from firing SiC in a nitrogen environment (Col 3 lines 1-3). This is not found to be persuasive because Schwetz goes on to teach a solution to these problems that has nothing to do with changing the firing environment, namely using  $\beta$ -SiC mixed with small amounts of  $\alpha$ -SiC (Col 3 lines 4-24). Since there is a proposed solution to the method taught at Col 2 lines 41-69 that does not involve changing the nitrogen firing environment this can not be considered a teaching away from the use of a nitrogen firing environment.

Applicant further argues that Schwetz teaches away from the firing of SiC in a nitrogen environment where it points out that this has not been advantageous for introducing nitrogen into the body since the doping by this method is not accurate (Col 6 lines 27-33). This is not found to be persuasive because the stated purpose of firing in a nitrogen environment at Col 2 lines 41-69 is not to introduce nitrogen in to the body, but is to achieve a high density (Col 2 lines 55-58). The fact that the method used to raise the density (firing in nitrogen) does not also introduce nitrogen in to the body does not diminish the fact that it is effective for achieving a high density.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to RUSSELL J. KEMMERLE III whose telephone number is (571)272-6509. The examiner can normally be reached on Monday through Thursday, 7:00-5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/R. J. K./

Examiner, Art Unit 1791

/ Carlos Lopez/

Primary Examiner, Art Unit 1791